ments of university scholarship examinations, while preparatory schoolmasters must adapt their teaching to the competition for entrance scholarships at the secondary schools. Our whole system of higher education has got into a vicious groove of incessant competition. If the Commission succeeds in its mission, which is to stir up Englishmen to greater educational endeavour, it will have performed a great national service.

LECTURING on "The Work and Aims of the London University" on Monday evening at the London Institution, Sir Arthur Rücker remarked that a modern university had to concern itself with teaching, with research, and with technology. The London University was bound by its statutes to organise, improve, and extend higher education within a radius of thirty miles of the university buildings, but it started on this great task very sparsely equipped with funds. The Government gave a dignified centre in the Imperial Institute buildings and 8000*l.* a year, which was calculated to supply the actual needs of the university for the central staff and for carrying on the examinations, leaving the sum of 1500*l.* yearly with which to improve, organise, and extend higher education in London and thirty miles around. However, the London County Council put aside an annual grant of 10,000*l.* for the university, and that had enabled it to start from the first as a teaching university. It was essential, in carrying on the work, that the efforts of the university should at particular times be concentrated on particular objects, and at present three schemes had been proposed. The first of these was the incorporation of University College, which has offered to place its whole property at the disposal of the university and under its control. In order to carry out this scheme 200,000*l.* was needed to make the college ready for incorporation. The Drapers' Company had given 30,000*l.* for this object, and altogether about 100,000*l.* had been raised. But the scheme was delayed for the want of another like amount. The second scheme was connected with the great medical schools of London. They were at present hampered by the necessity of providing education in subjects such as physics and chemistry, which could be equally well taught at a distance from a hospital, and they were anxious that the university should undertake the whole of that work. This proposal would coordinate teaching in London, and a beginning could be made if 100,000*l.* were provided. The third scheme was that of a new college of technology proposed by Lord Rosebery. Large sums had been promised by private donors for this purpose, and the County Council had promised 20,000*l.* a year as an endowment if certain reasonable conditions were fulfilled. It was understood that about 100,000*l.* more was needed to carry out this plan also. Upon the carrying out of these schemes depended, among other things, whether the university was to be in reality a great teaching body or not.

SOCIETIES AND ACADEMIES.

LONDON.

Physical Society, October 23.—Dr. R. T. Glazebrook, F.R.S., president, in the chair.—The bending of magnetometer deflection-bars, by Dr. C. **Chree.** A theoretical paper contributed to the Society by the present author in May, 1901, proved, amongst other results, that the bending of the deflection-bar of an ordinary magnetometer, under the combined weight of the bar and its load, must increase the distance between the deflecting and deflected magnets, during a determination of horizontal force, to an extent which is not negligible. This conclusion has been borne out by direct observations made at the National Physical Laboratory on a number of magnetometer-bars, including specimens from the leading makers. The mean results thus obtained are recorded in the present paper. In many magnetometers the increase in distance due to the bending is roughly proportional to the distance itself. In the case of bars by the Cambridge Instrument Company, the bending increased the distance by almost exactly 1 part in 10,000 at all distances. It is hoped that the method employed will prove useful to magnetic observers who have not ready access to a physical laboratory.—On the magnetism of basalt and the magnetic behaviour of basaltic bars when heated in air, by Dr. G. E. **Allan.** Bars cut from basalt obtained from Rowley Regis and from Linz, Germany, were tested by means of a magnetometric method to determine their magnetic properties at temperatures from 15° to 800° C. Hysteresis curves are given, and the temperature-permeability curves show that whilst the English basalt has, in general, a maximum permeability near 500° C., followed by a minimum about 550° C., the temperature of maximum permeability in the case of the German basalt lay in the neighbourhood of 50° C., there being a subsequent gradual loss of strength with rise of temperature. Sections of heated and unheated rocks are given, showing evidence of chemical change in some of the rock constituents, and a table of values of susceptibility of the specimens is appended.

Royal Microscopical Society, October 21.—Dr. Hy. Woodward, F.R.S., president, in the chair.—Mr. J. W. **Gordon** exhibited some photomicrographs of *Pleurosigma angulatum*, taken with a 1/14th inch oil immersion objective, the magnified image being received on an oscillation screen; the image so obtained was further magnified 150 times by a second microscope placed above the first, the arrangement being similar to that exhibited and described by Mr. Gordon when he read his paper on the Helmholtz theory of the microscope. The photograph was then enlarged by the usual process. The source of illumination was a pin-hole lighted by a Welsbach burner, but Mr. Gordon thought it would be better to use a lime-light for the purpose, as the threads of the mantle produced a somewhat striped effect, which rather impaired the appearance of the photograph.—Mr. C. D. **Soar** exhibited on the screen by means of the epidiascope a large number of drawings of British water mites, one or more species of each genus being included in the series. He gave a brief explanation of the special characters of each species shown.—A paper by Mr. F. W. **Millett,** being part xv. of his report on the Foraminifera of the Malay Archipelago, was taken as read.

Challenger Society, October 28.—Sir John Murray, F.R.S., in the chair.—Dr. R. N. **Wolfenden** read a paper on the distribution of the Copepoda as illustrated by his cruises from Valentia to the Færöe Banks and in the "cold area" of the Færöe Channel. Two species proved to be purely epiplanktonic, both in the warm and cold areas, twelve were eurythermic and eurybathic, ranging from the surface to 700 fathoms in both areas. Forty-seven out of sixty-four in the warm Atlantic, and twenty-three out of forty-seven species in the cold area, were mesoplanktonic, and not met with in the adult condition at less than 200 fathoms, although some few were epiplanktonic when young. No less than thirteen species were captured at 1000 fathoms. There is evidence that certain forms are confined to the bottom, and form part of a true hypoplankton (in the sense in which that word was originally introduced); mesoplanktonic forms are found among these latter.—Dr. E. J. **Allen** contributed notes on the changes observed in the water temperatures and plankton south-west of the Eddystone.—Mr. L. A. **Borradaile** exhibited and made remarks on symbiotic crabs from the Maldive Islands.—Mr. **Bidder** showed and explained a new meter for bottom currents.

PARIS.

Academy of Sciences, October 27.—M. Albert Gaudry in the chair.—On the scintillating phosphorescence presented by certain substances under the action of the radium rays, by M. Henri **Becquerel.** By working with the radium emanation in a strong magnetic field it was clearly proved that it is the α rays which cause the scintillation, this result being in agreement with the suggestion of Sir W. Crookes: the phosphorescence excited by the β rays, when it is appreciable, masks the effect of the α rays. The double sulphate of uranium and potassium is rendered phosphorescent by the β rays, the platinocyanide of barium by both α and β rays, whilst hexagonal blende and diamond are especially affected by the α rays, the phenomenon being very brilliant with the diamond. The facts observed are all in accordance with the hypothesis that the scintillation is due to cleavages irregularly provoked on the crystalline

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screen by the prolonged action of the α rays.—Observation of the eclipse of the sun of September 20, made at the island of Réunion, by MM. Edmond **Bordage** and A. **Garsault.**—Observations of Mars made with the large telescope of the Observatory of Meudon, by M. G. **Millochau.** The appearance of the markings on the planet when viewed through the large instrument differs in some respects from the previous observations made with smaller telescopes. Four drawings accompany the paper, showing the appearance on different dates.—On the groups of transformations of linear equations of finite differences, by M. Alf. **Guldberg.**—On the practical solution of equations, by M. **Rabut.**—The experimental determination of the momentary pressure resulting from shock, by M. **Ringelmann.** The results obtained can be expressed by the formula $C=kPv$, in which C is the momentary pressure, P the weight of the falling body, v its velocity, and k an experimental coefficient, 13·55.—On a capillarimeter, by MM. E. **Tassilly** and A. **Chamberland.** The instrument consists of a biconcave cylindrical lens, on the plane edges of which two plane parallel plates are clamped, the difference in the heights of the meniscus on either side being measured.—The change of electrical resistance of selenium under the influence of certain substances, by M. A.-B. **Griffiths.**—On the fusibility of mixtures of sulphur and bismuth, by M. H. **Pélabon.** The fusibility curve is represented by three straight lines, with two points of inflection, one at 435° C. and the other at 685° C., the latter corresponding to the sulphide BiS.—The action of boric acid upon iodides; its use in the separation of iodine from iodides in the presence of bromides and chlorides, by MM. H. **Baubigny** and P. **Rivals.** Iodine can be separated from a mixture of haloid salts by distilling with boric acid and manganese peroxide in a current of air.—On the composition of the prehistoric bronzes of Charente, by M. **Chesneau.**—The calculation of the heat of combustion of organic acids, their anhydrides and esters, by M. P. **Lemoult.** By assuming certain thermal values for the (CO.OH), (C=C), (CO.O.CO), and (CO.O.C) groups, a general formula is given for the heat of combustion of the above named substances. On 450 cases examined, in 12 per cent. the approximation is within 1 per cent., in 20 per cent. between 1 and 0·5 per cent., and in 68 per cent. within 0·5 per cent. of the experimental values.—Researches on isoglucosamine, by M. L. **Maquenne.** Isoglucosamine is reduced by sodium amalgam to two stereoisomeric bases, one being *d*-glucamine, the other *d*-mannamine. Isoglucosamine thus furnishes a new means of passing from the mannite to the sorbite series.—The action of chlorine on barium acetate, by M. Albert **Colson.** A chloroacetate is formed of the composition $[BaCl.(C_2H_3O_2)+H.(C_2H_3O_2)]$.—Solid azo-colouring matters derived from α-amino-anthraquinone, by M. Charles **Lauth.**—Study of some ancient samples of bread. An examination of bread from Pompeii, Aosta, Egyptian tombs, and the lake dwellings of Neuchatel, by M. L. **Lindet.**—The tectonic structure of the island of Eubea, by M. **Deprat.**—Study of the muscular contractions and of the reflexes in *Stichopus regalis*, by M. Victor **Henri.**—On the stimulation of nerves and muscles by discharges from condensers, by M. J. **Cluzet.**—The seat of epileptiform convulsions, by M. Nino **Samaja.**—A new dental and surgical drill, by MM. J. **Bercut** and A. **Donat.**—On the curve of output of a subterranean spring, by M. Edmond **Maillet.**

DIARY OF SOCIETIES.

THURSDAY, NOVEMBER 5.

CHEMICAL SOCIETY, at 8.—Conductivity of Substances Dissolved in Certain Liquefied Gases. Preliminary Notice: B. D. Steele and D. McIntosh.—The Reduction of Hydrazoic Acid: W. T. Cooke.—The Behaviour of Metallic Oxides towards Fused Boric Anhydride: C. H. Burgess and A. Holt, Jun.—Some Reactions of Vanadium Tetrachloride: B. D. Steele.—Studies on Comparative Cryoscopy. Part I.: The Fatty Acids and their Derivatives in Phenol Solution: P. W. Robertson.—The Vapour Pressures of Sulphuric Acid Solutions. Preliminary Note: B. C. Burt.—The Viscosity of Liquid Mixtures. Preliminary Note: A. E. Dunstan and W. H. C. Jemmett.—Additive Compounds of *s*-Trinitrobenzene and Alkylated Arylamines: H. Hibbert and J. J. Sudborough.—A Contribution to the Study of the Reactions of Hydrogen Peroxide: J. McLachlan.—The Constitution of Certain Silicates: C. Simmonds.—Constitution of Ethyl Cyanacetate. Condensation of Ethyl Cyanacetate with its Enolic Form: P. Remfry and J. F. Thorpe—Interaction between Chloric and Hydriodic Acids: J. McCrae.—3:5:-Dichloro-1:1:2-Trimethyldihydrobenzene. A Correction: A. W. Crossley.—The Estimation of Hydroxylamine: H. O. Jones and F. W. Carpenter.—A Study of the Isomerism and Optical Activity of Quinquevalent Nitrogen Compounds: H. O. Jones.—The Action of Water and Dilute Caustic Soda Solutions on Crystalline and Amorphous Arsenic: W. T. Cooke.—The Union of Carbon Monoxide and Oxygen, and the Drying of Gases by Cooling: A. F. Girvan.

RONTGEN SOCIETY, at 8.30.—President's Address.

LINNEAN SOCIETY, at 8.—On the Structure of the Leaves of the Bracken, *Pteris aquilina*, in relation to environment: L. A. Boodle—On the Life-history of a New Monophlebus from India, with a Note on that of a Vedalia predaceous upon it; with Remarks on the Monophlebinæ of the Indian Region: E. P. Stebbing.

FRIDAY, NOVEMBER 6.

GEOLOGISTS' ASSOCIATION, at 8.—Conversazione at University College.

TUESDAY, NOVEMBER 10.

ROYAL GEOGRAPHICAL SOCIETY, at 8.30.—North Polar Exploration, 1898–1902: Commander R. E. Peary, U.S.N.

INSTITUTION OF CIVIL ENGINEERS, at 8.—Tensile Tests of Mild Steel, and the Relation of Elongation to the Size of the Test-bar: Prof. W. C. Unwin, F.R.S.

ANTHROPOLOGICAL INSTITUTE, at 8.15.—Exhibition of Pictures Painted by Colour-blind Persons: Dr. F. W. Edridge-Green.—The Survival of Primitive Implements in the Færöes and Iceland: N. Annandale.—Anthropological Notes on Kikuyu and Kamba: H. R. Tate.

THURSDAY, NOVEMBER 12.

MATHEMATICAL SOCIETY, at 5.30.—Annual General Meeting.—On Sequences of Sets of Intervals containing a Given Set of Points: W. H. Young.—On Spherical Curves: H. Hilton.—On the Weddle Quartic Surface: Dr. H. F. Baker.—A Formal Generalisation of Maclaurin's Theorem: Rev. F. H. Jackson.—Diffraction: W. H. Jackson.—A General Theorem concerning Absolutely Convergent Series: G. H. Hardy.—Note on Borgnet's Method of Dividing an Angle in an Arbitrary Ratio: Prof. J. D. Everett.—On an Expression of the Electromagnetic Field by Means of Two Scalar Potential Functions: E. T. Whittaker.—The Propagation of Wave-motion in an Isotropic Elastic Solid Medium: Prof. A. E. H. Love.

INSTITUTION OF ELECTRICAL ENGINEERS, at 8.—Inaugural Address by the President, Mr. Robert Kaye Gray.

FRIDAY, NOVEMBER 13.

ROYAL ASTRONOMICAL SOCIETY, at 5.

PHYSICAL SOCIETY, at 8.—(1) Means for Electrifying the Atmosphere on a Large Scale: (2) an Arrangement for driving Mercury Pumps: Sir Oliver J. Lodge.

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